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ABSTRACT

A single subject ABAB design was used to investigate the effect on academic achievement of altering the sleeping arrangements of a low-achieving, 9-year-old third grade male student who slept in bunk beds with an older brother aged 14 years. The subject's diagnostic test performance on reading and math measures was assessed at the beginning of the school year. He received a 1.5 grade equivalent score in reading and correctly answered three out of 26 math questions. The ABAB single subject design was chosen in order to relate sleeping patterns and school achievement. In the A periods, the subject slept in twin beds in one room with his brother. In the B periods, the subject slept in a separate room alone. The A and B periods were not uniform in length. The first A period lasted 17 weeks to establish a baseline for the subject's academic performance. The first B interval in which the subject slept alone was terminated when the child's teacher observed that he had scored higher on spelling tests and with more consistency than previously. The second A period was terminated when adverse results appeared on school work. The subject was then returned to the B condition until the end of the school year. In the last B condition reading and math posttests were administered. Results indicate that the subject showed substantial gains in academic tests (spelling, reading and math) during B periods when he slept in a separate room alone. Results and limitations of the study are discussed. (Author/RH)

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Night Sleep in the Company of a Sibling Related to School Achievement

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Abstract

This pilot study explored the results in academic achievement when a third grade male subject was taught to sleep alone at night. An ABAB single subject design was used. First, a baseline of seventeen spelling test scores was noted while subject was sleeping at night with an older brother of 14. Second, the subject slept alone, and four tests were taken and recorded. Third, the brothers slept together and two tests were recorded. Fourth, they were separated for a second time and six tests were recorded. The spelling, reading, and mathematics tests taken in a B period showed a gain in class rank over those taken in an A period. Counselors in education may find the results meaningful for some students who are poorly motivated. The data indicate further study in this area would be productive.

Night Sleep in the Company of a Sibling Related to School Achievement

Educational psychology has always been concerned with increasing scholastic achievement in students, especially students who appear normal, active, and competent out of the classroom, but who are not motivated in class in reading, mathematics, or spelling.

For many years educational psychologists have correlated one area of a child's home life with school achievement. Olnick and Bills (1970) investigated family configuration and achievement and the effects of birth order. Benson, Haycroft, Steyeart, and Weigel (1980) studied mobility in sixth graders as related to achievement, adjustment, and socio-economic status. Farley (1980) noted creativity and scholastic achievement of women as a function of birth order and family size. Guinn (1980) recorded the phenomenon of Mexican-American fathers' use of alcohol and marijuana and their sons' academic and attendance problems. According to this study socio-economic factors had no effect on school achievement. Ho (1980) studied variables of sibling categories as determinants of intellectual academic ability in Hong Kong pupils. Rosenthal (1978) related working mothers and their children's educational achievement.

Two studies have noted that sleeping patterns have an effect on children's personalities. Caudill and Plath (1966) noted Japanese children who slept with family members developed strong family dependency.

Lifshitz and Ramot (1978) found children who slept apart from their parents, and with other children of the kibbutz, developed significantly more inner locus of control.

Pursuing this direction in research, this pilot study intervened in the family life of a low-achieving, nine-years-old, third grade, male student in an inner-city school who nightly slept in bunk beds with an older brother of 14. What would be the effect if the siblings were separated? What effect would the separation have on weekly spelling tests? What effect would it have on mathematics and reading achievement tests? What would be the effect if they were moved together once more? What would be the effect if they were separated a second time? These are the questions which were considered in this study.

The answers to these question might help teachers teach their students. Teachers and counselors would benefit by studying and recognizing that this factor might be influential in the academic success of a student.

Method

This was a pilot study using one subject, a male in the third grade; he had repeated the second grade. He scored low on diagnostic tests at the beginning of the year, receiving a 1.5 grade equivalent score in reading, and correctly answering three out of 26 questions in mathematics. This subject was selected because his mother spontaneously volunteered her family for the experiment in a private conference. The family lived

in the inner-city of a Midwestern town of 130,000. All students in his class were tested weekly in spelling. The number of students in his classroom varied from 21 to 27 during the school year.

The diagnostic tests were the Gates-MacGinitie Reading Test (1968), and the Stanford Achievement Test (1973). The spelling tests were from Spell Correctly (1977).

The ABAB single subject design was chosen to relate the sleeping pattern and school achievement. In A periods the subject slept in twin beds with his 14 year old brother. In the B periods the subject slept in a separate room.

The A and B periods were not uniform in length. The first A period lasted for seventeen weeks to establish a baseline of the subject's academic performance. The first B interval when he slept alone was terminated when the child's teacher observed he had scored higher in raw scores and with more consistency than previously. This B period was short so that a shadow effect would not influence the second A period. The second A period was terminated when adverse results appeared in school work. The subject then returned to B period until the end of the school year. In this last B period the reading and mathematics post tests were administered.

Results

The subject showed substantial gains in academic tests in B periods when he slept alone. Class standard deviations for spelling

tests showed the subject tested inside the standard deviation once in 17 tests in A periods. In B periods the subject tested within the standard deviation four times in 10 tests. In the pre and post tests for mathematics and reading the subject's scores fell within the standard deviation; however, his rank in class improved in B periods for both tests. It is important to note that he exceeded the class mean in the second mathematics test.

Insert Figure I and II and Table 1 about here

Discussion

The work of Caudill and Plath (1966), which showed family sleeping custom affected family dependency; and the work of Lifshitz and Ramot (1978), which showed sleeping apart from the family correlated with inner locus of control, stimulated questions about sleeping custom and school achievement which this research considered. Children who sleep alone learn to deal with their fears in the night. Consequently they become more realistic and self-reliant, and these qualities go with them into the classroom. In the case considered here, the younger subject had a habit of depending on his older brother for protection. He was protected and did not have to be concerned with spelling, reading and mathematics prior to this experiment. The ABAB single subject design has limitations. It cannot have the statistical strength or

scientific rigor of a design with a larger subject group and a control group. Some study should be made of the relationship between academic achievement and a comparable reward like family sleeping. More study is needed in this area of child development.

Learning to sleep alone had beneficial effects in academic achievement for this third grader in reading, mathematics, and spelling. The results of this study indicate that teachers and counselors should consider the findings of Caudill and Plath (1966) and Lifshitz and Ramot (1978) when they work to improve some student's academic achievement.

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Footnotes

This paper was prepared for the course Research In Counseling at the University of Evansville, Indiana, 1981. Reprint requests may be addressed to S. Ong, 2605 East Walnut, Evansville, Indiana 47714.

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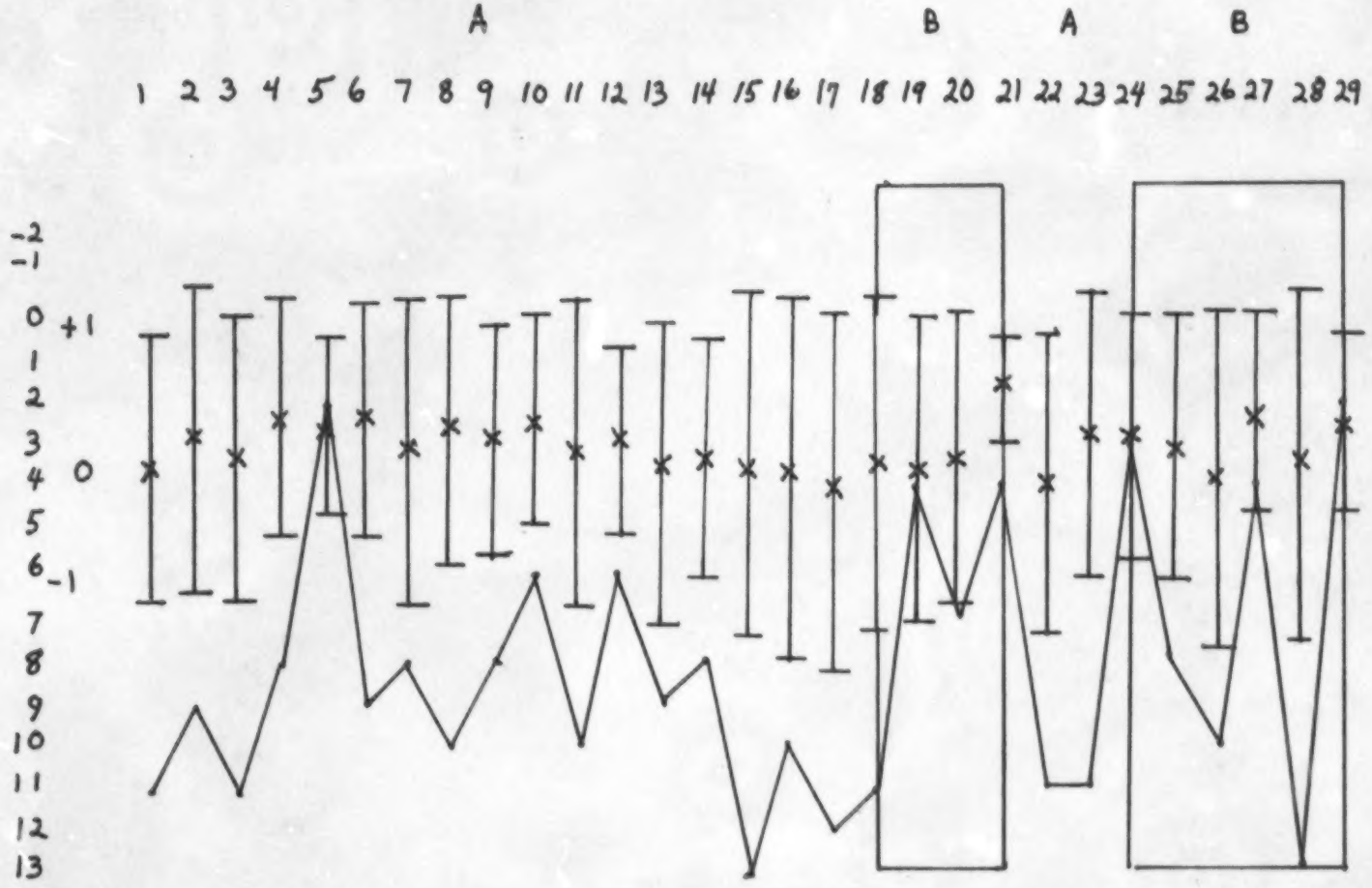
Figure Captions

Figure 1. Weekly spealling tests showing subject's scores, standard deviations of his class and the class average.

Figure 2. Stanford Achievement Test scores in the Fall, A, and Spring, B, showing subject's scores, the standard deviations of his class and the class average.

FIGURE I
GRAPH I



SUBJECT'S SCORE •
CLASS AVERAGE ×
STANDARD DEVIATION I
A - S SLEPT WITH BROTHER
B - S SLEPT ALONE

NIGHT SLEEP

FIGURE 2

Table 1

Subject's Rank in Class for the Stanford Achievement Tests in Reading and Mathematics

Taken in Fall, A, and Spring, B. A, Subject slept with brother; B, Subject slept alone.

Mathematics	A	B
Class number	25	25
Subject's rank	21	12.5
Reading	A	B
Class number	25	25
Subject's rank	23.5	19